

# **EXHIBIT 11**

Reference Manual on Scientific Evidence: Third Edition

# Reference Manual on Scientific Evidence

*Third Edition*

Committee on the Development of the Third Edition of the  
Reference Manual on Scientific Evidence

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in these waters?”<sup>144</sup>). Closed-ended questions provide the respondent with an explicit set of responses from which to choose; the choices may be as simple as *yes* or *no* (e.g., “Is Colby College coeducational?”<sup>145</sup>) or as complex as a range of alternatives (e.g., “The two pain relievers have (1) the same likelihood of causing gastric ulcers; (2) about the same likelihood of causing gastric ulcers; (3) a somewhat different likelihood of causing gastric ulcers; (4) a very different likelihood of causing gastric ulcers; or (5) none of the above.”<sup>146</sup>). When a survey involves in-person interviews, the interviewer may show the respondent these choices on a showcard that lists them.

Open-ended and closed-ended questions may elicit very different responses.<sup>147</sup> Most responses are less likely to be volunteered by respondents who are asked an open-ended question than they are to be chosen by respondents who are presented with a closed-ended question. The response alternatives in a closed-ended question may remind respondents of options that they would not otherwise consider or which simply do not come to mind as easily.<sup>148</sup>

The advantage of open-ended questions is that they give the respondent fewer hints about expected or preferred answers. Precoded responses on a closed-ended question, in addition to reminding respondents of options that they might not otherwise consider,<sup>149</sup> may direct the respondent away from or toward a particular response. For example, a commercial reported that in shampoo tests with more than 900 women, the sponsor’s product received higher ratings than

144. A relevant example from *Wilhoite v. Olin Corp.* is described in McGovern & Lind, *supra* note 31, at 76.

145. *Presidents & Trustees of Colby College v. Colby College*—N.H., 508 F.2d 804, 809 (1st Cir. 1975).

146. This question is based on one asked in *American Home Products Corp. v. Johnson & Johnson*, 654 F. Supp. 568, 581 (S.D.N.Y. 1987), that was found to be a leading question by the court, primarily because the choices suggested that the respondent had learned about aspirin’s and ibuprofen’s relative likelihood of causing gastric ulcers. In contrast, in *McNeilab, Inc. v. American Home Products Corp.*, 501 F. Supp. 517, 525 (S.D.N.Y. 1980), the court accepted as nonleading the question, “Based only on what the commercial said, would Maximum Strength Anacin contain more pain reliever, the same amount of pain reliever, or less pain reliever than the brand you, yourself, currently use most often?”

147. Howard Schuman & Stanley Presser, *Question Wording as an Independent Variable in Survey Analysis*, 6 Soc. Methods & Res. 151 (1977); Schuman & Presser, *supra* note 134, at 79–112; Converse & Presser, *supra* note 126, at 33.

148. For example, when respondents in one survey were asked, “What is the most important thing for children to learn to prepare them for life?”, 62% picked “to think for themselves” from a list of five options, but only 5% spontaneously offered that answer when the question was open-ended. Schuman & Presser, *supra* note 134, at 104–07. An open-ended question presents the respondent with a free-recall task, whereas a closed-ended question is a recognition task. Recognition tasks in general reveal higher performance levels than recall tasks. Mary M. Smyth et al., *Cognition in Action* 25 (1987). In addition, there is evidence that respondents answering open-ended questions may be less likely to report some information that they would reveal in response to a closed-ended question when that information seems self-evident or irrelevant.

149. Schwarz & Hippler, *supra* note 133, at 43.

*Reference Guide on Survey Research*

other brands.<sup>150</sup> According to a competitor, the commercial deceptively implied that each woman in the test rated more than one shampoo, when in fact each woman rated only one. To test consumer impressions, a survey might have shown the commercial and asked an open-ended question: “How many different brands mentioned in the commercial did each of the 900 women try?”<sup>151</sup> Instead, the survey asked a closed-ended question; respondents were given the choice of “one,” “two,” “three,” “four,” or “five or more.” The fact that four of the five choices in the closed-ended question provided a response that was greater than one implied that the correct answer was probably more than one.<sup>152</sup> Note, however, that the open-ended question also may suggest that the answer is more than one.

By asking “how many different brands,” the question suggests (1) that the viewer should have received some message from the commercial about the number of brands each woman tried and (2) that different brands were tried. Similarly, an open-ended question that asks, “[W]hich company or store do you think puts out this shirt?” indicates to the respondent that the appropriate answer is the name of a company or store. The question would be leading if the respondent would have considered other possibilities (e.g., an individual or Webstore) if the question had not provided the frame of a company or store.<sup>153</sup> Thus, the wording of a question, open-ended or closed-ended, can be leading or non-leading, and the degree of suggestiveness of each question must be considered in evaluating the objectivity of a survey.

Closed-ended questions have some additional potential weaknesses that arise if the choices are not constructed properly. If the respondent is asked to choose one response from among several choices, the response chosen will be meaningful only if the list of choices is exhaustive—that is, if the choices cover all possible answers a respondent might give to the question. If the list of possible choices is incomplete, a respondent may be forced to choose one that does not express his or her opinion.<sup>154</sup> Moreover, if respondents are told explicitly that they are

150. See *Vidal Sassoon, Inc. v. Bristol-Myers Co.*, 661 F.2d 272, 273 (2d Cir. 1981).

151. This was the wording of the closed-ended question in the survey discussed in *Vidal Sassoon*, 661 F.2d at 275–76, without the closed-ended options that were supplied in that survey.

152. Ninety-five percent of the respondents who answered the closed-ended question in the plaintiff’s survey said that each woman had tried two or more brands. The open-ended question was never asked. *Vidal Sassoon*, 661 F.2d at 276. Norbert Schwarz, *Assessing Frequency Reports of Mundane Behaviors: Contributions of Cognitive Psychology to Questionnaire Construction*, in *Research Methods in Personality and Social Psychology* 98 (Clyde Hendrick & Margaret S. Clark eds., 1990), suggests that respondents often rely on the range of response alternatives as a frame of reference when they are asked for frequency judgments. See, e.g., Roger Tourangeau & Tom W. Smith, *Asking Sensitive Questions: The Impact of Data Collection Mode, Question Format, and Question Context*, 60 *Pub. Op. Q.* 275, 292 (1996).

153. *Smith v. Wal-Mart Stores, Inc.*, 537 F. Supp. 2d 1302, 1331–32 (N.D. Ga. 2008).

154. See, e.g., *American Home Prods. Corp. v. Johnson & Johnson*, 654 F. Supp. 568, 581 (S.D.N.Y. 1987).

not limited to the choices presented, most respondents nevertheless will select an answer from among the listed ones.<sup>155</sup>

One form of closed-ended question format that typically produces some distortion is the popular agree/disagree, true/false, or yes/no question. Although this format is appealing because it is easy to write and score these questions and their responses, the format is also seriously problematic. With its simplicity comes acquiescence, “[T]he tendency to endorse any assertion made in a question, regardless of its content,” is a systematic source of bias that has produced an inflation effect of 10% across a number of studies.<sup>156</sup> Only when control groups or control questions are added to the survey design can this question format provide reasonable response estimates.<sup>157</sup>

Although many courts prefer open-ended questions on the ground that they tend to be less leading, the value of any open-ended or closed-ended question depends on the information it conveys in the question and, in the case of closed-ended questions, in the choices provided. Open-ended questions are more appropriate when the survey is attempting to gauge what comes first to a respondent’s mind, but closed-ended questions are more suitable for assessing choices between well-identified options or obtaining ratings on a clear set of alternatives.

*D. If Probes Were Used to Clarify Ambiguous or Incomplete Answers, What Steps Were Taken to Ensure That the Probes Were Not Leading and Were Administered in a Consistent Fashion?*

When questions allow respondents to express their opinions in their own words, some of the respondents may give ambiguous or incomplete answers, or may ask for clarification. In such instances, interviewers may be instructed to record any answer that the respondent gives and move on to the next question, or they may be instructed to probe to obtain a more complete response or clarify the meaning of the ambiguous response. They may also be instructed what clarification they can provide. In all of these situations, interviewers should record verbatim both what the respondent says and what the interviewer says in the attempt to get or provide clarification. Failure to record every part of the exchange in the order in which it occurs raises questions about the reliability of the survey, because neither the court nor the opposing party can evaluate whether the probe affected the views expressed by the respondent.

155. See Howard Schuman, *Ordinary Questions, Survey Questions, and Policy Questions*, 50 Pub. Opinion Q. 432, 435–36 (1986).

156. Jon A. Krosnick, *Survey Research*, 50 Ann. Rev. Psychol. 537, 552 (1999).

157. See *infra* Section IV.F.